

WHAT IS CLAIMED IS:

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1. A method of detecting an endpoint of polishing processing, comprising the steps of:  
concurrently irradiating a film formed on a surface of a wafer under polishing processing with lights having two or more different wavelengths;  
detecting reflected lights from said film caused by the irradiation; and  
detecting the endpoint of polishing processing of said film on the basis of a relationship between intensities of the detected reflected lights.
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2. A method of detecting an endpoint of polishing processing according to claim 1, wherein said endpoint of polishing processing is detected on the basis of an intensity ratio of said detected reflected lights.
3. A method of detecting an endpoint of polishing processing, comprising the steps of:  
irradiating a film formed on a surface of a wafer under polishing processing with a white light;  
detecting a reflected light from said film caused by the irradiation; and  
detecting the endpoint of polishing processing on the film on the basis of a spectral intensity of the intensity of the detected reflected light.
4. A method of detecting an endpoint of polishing processing, comprising the steps of:

irradiating a film formed on a surface of a wafer under polishing processing with a UV light;

detecting a reflected UV light from said film caused by the irradiation; and

detecting the endpoint of polishing processing on the film on the basis of an intensity of the detected UV light.

5. An apparatus for detecting an endpoint of polishing processing, comprising:

irradiating means for concurrently irradiating a film formed on a surface of a wafer under polishing processing with two or more different lights;

detecting means for detecting reflected lights from the film concurrently irradiated with two or more different lights by the irradiating means; and

processing means for detecting the endpoint of polishing processing on the film on the basis of a relationship between intensities of the reflected lights detected by the detecting means.

6. An apparatus for detecting an endpoint of polishing processing according to claim 5, wherein said processing means detect the endpoint of polishing processing on said film on the basis of an intensity ratio of said detected reflected lights.

7. An apparatus for detecting an endpoint of polishing processing, comprising:

irradiating means for irradiating a film formed on a surface of a wafer under polishing

processing with a white light;

detecting means for detecting a reflected light from the film irradiated with the white light by the irradiating means; and

processing means for detecting the endpoint of polishing processing on the film on the basis of a relationship between a spectral intensity of the reflected light detected by the detecting means.

8. An apparatus for detecting an endpoint of polishing processing, comprising:

irradiating means for irradiating a film formed on a surface of a wafer under polishing processing with a UV light;

detecting means for detecting a reflected light from the film irradiated with the UV light by the irradiating means; and

processing means for detecting the endpoint of polishing processing on the film on the basis of a relationship in accordance with an intensity of the UV light detected by the detecting means.

Sub 9. A method of manufacturing a semiconductor device, comprising the steps of:

forming a an insulating film on a surface of a wafer;

attaching the wafer having the insulating film formed on its surface to a polishing processing machine;

starting polishing processing of the wafer

attached to the polishing processing machine;

concurrently irradiating the surface of said wafer under polishing processing with lights having two or more different wavelengths;

detecting respective reflected lights from the insulating film on said wafer surface generated by the irradiation;

detecting an endpoint of polishing processing on the film on the basis of a relationship between intensities of the detected reflected lights;

stopping polishing processing of said wafer on which the endpoint is detected;

detaching the wafer whose polishing processing is stopped from said polishing processing machine; and

forming a new wiring pattern on said insulating film of the wafer detached from said polishing processing machine.

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10. A method of manufacturing a semiconductor device according to claim 9, wherein a polishing rate of the film is evaluated on the basis of the intensities of said detected reflected lights so as to change dressing conditions of a dresser to a pad used for polishing processing on the basis of the evaluation result.

11. A method of manufacturing a semiconductor device according to claim 10, wherein said dressing conditions include at least one of a dressing pressure,

the number of revolutions, and a rocking motion period of said dresser and a type of working tool used for dressing.

12. A method of manufacturing a semiconductor device, comprising the steps of:

forming an insulating film on a surface of a wafer;

attaching the wafer having the insulating film formed on its surface to a polishing processing machine;

starting polishing processing of the wafer attached to the polishing processing machine;

irradiating the surface of said wafer under polishing processing with a white light;

detecting a reflected light from the insulating film on said wafer surface generated by the irradiation;

detecting an endpoint of polishing processing on the film on the basis of the intensity of the detected reflected light;

stopping polishing processing of said wafer on which the endpoint is detected;

detaching the wafer whose polishing processing is stopped from said polishing processing machine; and

forming a new wiring pattern on said insulating film of the wafer detached from said polishing processing machine.

13. A method of manufacturing a semiconductor device according to claim 12, wherein a polishing rate of the film is evaluated on the basis of the intensity of said detected reflected light so as to change dressing conditions of a dresser to a pad used for polishing processing on the basis of the evaluation result.

14. A method of manufacturing a semiconductor device according to claim 13, wherein said dressing conditions include at least one of a dressing pressure, the number of revolutions, and a rocking motion period of said dresser and a type of working tool used for dressing.

15. A method of manufacturing a semiconductor device, comprising the steps of:

forming an insulating film on a surface of a wafer;

attaching the wafer having the insulating film formed on its surface to a polishing processing machine;

starting polishing processing of the wafer attached to the polishing processing machine;

irradiating the surface of said wafer under polishing processing with a UV light;

detecting a UV light reflected on the surface of said wafer by the irradiation;

detecting an endpoint of polishing processing on the film on the basis of the intensity of the

detected UV light;

stopping polishing processing of said wafer on which the endpoint is detected;

detaching the wafer whose polishing processing is stopped from said polishing processing machine; and

forming a new wiring pattern on said insulating film of the wafer detached from said polishing processing machine.

16. A method of manufacturing a semiconductor device according to claim 15, wherein a polishing rate of the film is evaluated on the basis of the intensity of said detected reflected light so as to change dressing conditions of a dresser to a pad used for polishing processing on the basis of the evaluation result.

17. A method of manufacturing a semiconductor device according to claim 16, wherein said dressing conditions include at least one of a dressing pressure, the number of revolutions, and a rocking motion period of said dresser and a type of working tool used for dressing.

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